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Food Sanitation Hygiene Behavior and its Relationship With the Incidence of Stunting

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Abstract.
Stunting is a linear growth delay caused by the accumulation of nutritional insufficiency over a long period. Influencing factors include maternal hygiene behavior related to nutrition and the incidence of food-related infections. This research aimed to determine the relationship between food sanitation hygiene behavior and the incidence of stunting in infants. This was an observational study with a cross-sectional design. The research subjects included 65 mothers and their toddlers aged 24-59 months. The Home Food Safety Questionnaire was used to measure food sanitation hygiene, and heights were measured with a microtoise. Data analysis was conducted using Spearman Rank. The results showed that there was a significant relationship between the behavior of sanitation hygiene and the incidence of stunting (p = 0.04). It is important to take into account other factors such as maternal knowledge, toddler weight history, and maternal nutrition during pregnancy.

Keywords: behavior, hygiene, food sanitation, stunting, toddlers

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1. Introduction

The success of the level of health development of an area can be determined by the availability of quality Human Resources (HR), for that we need the role of nutrition. Good nutrition is very needed in brain development and good physical growth. To get good nutrition, it needs to be organized early on during pregnancy until the baby is 24 months old or commonly called the First 1000 Days of Life [1].

Stunting is an indicator of a condition of failure in growth (growth faltering) that occurs in children due to the accumulation of nutritional insufficiency that lasts long from the period of pregnancy until the baby is 2 years old [2]. The 24 month period is a period to determine the quality of life and is usually called the golden period and is sensitive because the effects caused to children will be permanent, therefore it is necessary to fulfill adequate nutrition. The problem of nutrition, especially stunting, is a nutritional

problem facing the world, especially in poor and developing countries [3]. Stunting itself becomes a problem that can cause negative impacts such as an increased risk of morbidity and mortality, suboptimal brain development so that motor development and mental growth are inhibited. If the negative impact continues, it will cause several risks such as intellectual decline, susceptibility to non-communicable diseases, decreased productivity to an increased risk of degenerative diseases [3].

Globally, more than a quarter (35%) of children under five experience stunting, directly and indirectly, due to malnutrition and infection during the first 1000 days of a child's life. Based on the development of the world of stunting affects 195 billion children under five in developing countries [4]. According to the World Health Organization (WHO), the prevalence of toddlers in Indonesia who are stunted is still high at (29%). Based on the most recent Basic Health Research conducted by the Ministry of Health in 2018, nearly eight million Indonesians under the age of five suffer from malnutrition which causes stunting/dwarf cases by 30.8% [5]. The prevalence of stunting in children aged 0-59 months (toddlers) in East Java Province is 19.89%, while in Malang the prevalence of stunting reaches 17.75% [6].

The various factors that cause stunting such as parental status, sociodemography, economics, cultural practices, and other related environmental and health variables, such as poverty, low parental education, family size, birth intervals, and lack of maternal knowledge about nutrition that causes lack sanitation, low food intake, poor feeding practices, inadequate breastfeeding, and recurrent infections [7].

Based on the exposure of various stunting factors, the factor of lack of mother's knowledge about nutrition tends to provide poor food practices to children for example by providing food regardless of nutritional content, quality, and food diversity. This can affect the behavior of food sanitation hygiene is not good. Toddlers who consume food with poor food sanitation can cause cases of foodborne disease. Factors of cases of congenital diseases include traditional food processing habits, storing and serving unclean food, and not following sanitation requirements resulting from food contamination. Food contamination can occur due to disease agents that can cause infections. Infections are highly associated with nutritional disorders such as reduced appetite, vomiting, diarrhea, and affecting food metabolism so that under-five food intake is not met. These conditions reduce the nutritional status of children under five and have bad implications for the progress of children's growth [8].

Food sanitation hygiene behavior is a healthy and clean behavior of a person in managing food and maintaining the hygiene of food equipment, in other words, a preventive measure is taken to free food from all hazards that can interfere with health

from processing to consumption. Food sanitation hygiene behavior is very useful, namely to ensure safety in preventing various diseases [9]. In a study conducted by (Oktaviana, 2016) [10] it is explained that based on the Pearson correlation test it is known that there is a relationship between maternal hygiene behavior with the occurrence of stunted and p-value (0.017), this is clarified by 44.4% of mothers behaving in terms of hygiene in the moderate category. Research in Bangladesh conducted by (Mostofa et al, 2018) [11]explained that water and food with poor sanitation and hygiene practices can cause a stunted 33%. Hygiene and sanitation behaviors towards toddlers contribute to stunted events in toddlers [12]. Research conducted by (Syam, 2020) [13] stated that 84.2% of mothers of stunting toddlers have not implemented hygiene and sanitation in the management of drinks and food. Based on this explanation, the researchers were interested in conducting a study entitled ”The Relationship of Food Sanitation Hygiene Behavior with the Occurrence of Stunting in the Ciptomulyo Health Center Work Area”, this research aims to know the relationship of food sanitation hygiene behavior with the incidence of stunting in infants.

2. Material and methods

2.1. Sample

This research is a research descriptive-analytic with a cross-sectional approach. The sample in this study was 65 mothers and toddlers aged 2-5 years in the Ciptomulyo Community Health Center in Indonesia.

2.2. Measures

Data collected using HFSQ (Home Food Safety Questionnaire) questionnaire and height measurement toddler by using *microtoise*. HFSQ (Home Food Safety Questionnaire) questionnaire is a questionnaire in the form of a statement consisting of 25 items using a Likert scale in which to observe sanitation hygiene behavior by selecting answers by checking the answer list ”Never valued = 0”, ”Rarely worth = 1”, ”Sometimes worth = 2”, ”Often worth = 3”, and ”Always worth = 4”. Statement items consist of 6 items relating to the principle of food sanitation hygiene, ranging from selecting food ingredients, storing food ingredients, processing food ingredients, storing processed foods, transporting food, and serving prepared foods and personal hygiene [14].

3. Results

Table 1: Characteristics of respondents

No.	Characteristics	Mean	SD	F	Percentage (%)
1	Toddler Age Range 21-30 months 31-40 months 41-50 months 51-60 months	42.51	10.94	65	16.9 27.7 26.2 29.2
2	Toddler Sex Male Girl			65	44.6 55.4
3	Mother's age <31 years old 31-35 years old > 35 years old	31.89	5.75	65	46.2 18.5 35.3
4	Mother's Education Level No school Elementary school Middle School High School Diploma / PT			65	1.5 10.8 24.6 60.0 3.1
5	Profession Housewives Private Labor			65	86.2 12.3 1.5

The highest age range for toddlers at the age of 51-60 boasted 19 people (29.2%). The highest sex of under-fives is 36 women (55.4%). The age of most mothers of children under five at the age of <31 years was 30 people (46.2%). The level of education of the majority of mothers graduating from High school is 39 people (60.0%). The majority of mothers work as Housewives of 56 people (86%).

Table 2: Frequency of Mother Distribution According to Food Sanitation Hygiene Behavior

Behavior	F	Percentage (%)
Good	9	13.8
Moderate	49	75.4
Bad	7	10.8
Total	**65**	**100.0**

Based on the table it is shown that the majority of maternal food hygiene behavior in the moderate category is 49 people (75.4%).

Table 3: Frequency Distribution of Stunting Events by Age.

Age	Nutritional status				Total	
	Stunted		Normal			
	F	(%)	F	(%)	F	(%)
21-30	6	54.5	5	45.5	11	100
31-40	5	27.8	13	72.2	18	100
41-50	1	5.9	16	94.1	17	100
51-60	3	15.8	16	84.2	19	100

Based on the table above can be seen that the majority of stunting distribution occurs at the age of 21-30 months with a total of 6 people (54.5%).

Table 4: Relationship of Food Sanitation Hygiene Behavior with Stunting Events.

		Stunting incident (n)		Total	Sig	Correlation Coefficient
		Normal	Stunting			
Food Sanitation Hygiene Behavior	Good	9	0	9	0.040	0.256
	Moderate	37	12	49		
	Bad	4	3	7		
Total		50	15	65		

The table explains that the majority of stunting toddlers whose mothers behave in food sanitation hygiene in the moderate category are 12 people (18.5%). While the minority of stunting toddlers whose mothers behave in food sanitation hygiene in the good category are 0 people (0%).

The results of Spearman's rho correlation test get the p-$_{value}$= 0.040 where the value is smaller than alpha (0.05), this shows that there is a relationship between food sanitation hygiene and the incidence of stunting relationship strength of (0.256) that is positively weak.

4. Discussion

Following WHO standards, the stunting incidence rate in an area is said to be good if the prevalence of short toddlers is less than 20%, from the explanation of the stunting incidence rate in the Ciptomulyo Public Health Center in Malang is quite high [15]. The incidence of stunting based on the results of this study there is a tendency that stunting toddlers are mostly found in the group of toddlers whose age is younger namely age 21-31 months by 54.5%. This is supported by research conducted by (Setyawati, 2018) [16] that shows that the highest number of short/stunting children is at the age of 24-35 months because at 24 months the child enters the weaning phase and a period of high activity in exploring the surrounding environment. Besides, toddlers' gross motor skills also grow and develop rapidly. At this stage some toddlers will experience several possibilities that cause nutritional deficiencies, namely a decrease in a child's appetite that causes a low nutritional intake, decreased sleep hours, easy for children to be infected when mothers/caregivers pay less attention to hygiene and sanitation. Other studies conducted by (Manggala, 2018) [17] also mentioned that as many as 69 people (41.6%) stunting occurred in toddlers aged 24-35 months.

The results of the study also showed that the majority of children under five who experience female sex stunting are 60%. This is supported by research conducted in West Nusa Tenggara Province in 2010 which stated that the majority of stunting occurred in female toddlers by 98 people (56.63%). However, different from the research conducted by (Putri, 2018) [18], it was explained that the sex of children under five who experienced the most stunting was male by 43 people (55.1%). This research also supported by other research conducted by (Setyawati, 2018) [16] which states that the highest incidence of stunting occurs in toddlers are male 65 people (56.5%) it is due to several causes namely the gross motor development of boys is faster and more diverse so it requires more energy. Besides, based on a Cohort Study in Ethiopia showing that babies of male sex have twice the risk of stunting than female babies.

Based on research results there is a significant relationship between the behavior of food sanitation hygiene with the incidence of stunting with a positive relationship which means that the higher the behavior of food sanitation hygiene which is moderate, the higher the incidence of stunting in infants. The results of this study stated that food sanitation hygiene behavior was found mostly in the moderate category and was proven to be related to the increased incidence of stunting as explained in the research conducted (Oktaviana, 2016) [10], states that stunting toddlers whose mothers behave in food sanitation hygiene in the medium category have the same tendency as stunting toddlers whose mothers behave poorly. This is influenced by food sanitation which has a positive impact on the nutritional status of children. Children who consume food with poor hygiene and do not meet the principles of food hygiene principles can cause nutrients in food not absorbed by the body, congenital diseases due to food, and infectious diseases that are usually accompanied by a reduction in appetite in infants. According to research conducted by (Khairiyah, 2020) [19], bad sanitation hygiene behavior 27 times can increase the risk of stunting than good sanitation hygiene behavior. Poor hygiene behavior of food sanitation is influenced by several factors including knowledge, attitudes, habits, culture, physical environment, infrastructure, and supporting facilities. From these factors, the level of lack of knowledge and inadequate physical environment plays a role in mothers having poor food sanitation hygiene behavior, causing the level of awareness of mothers to be low and mothers unable to absorb information about how to maintain personal hygiene and food so that nutritional content still absorbed by the body of a toddler and does not cause stunting.

Hygiene bad food has a contribution in causing diarrheal disease, it occurs due to pathogens that are transmitted through food. Food can provide a route for the transmission of environmental enteropathic agents that cause high diarrheal disease in

childhood and this tends to result in a lack of nutrient absorption in children's bodies resulting in stunting [20].

5. Conclusion and limitations

Based on the results of the study it can be concluded that there is a significant relationship between the behavior of food sanitation hygiene with the incidence of stunting in children under five in the working area of Ciptomulyo Health Center with a p-value = 0.040 which shows less than p-value (0.05). The results of this study stated that food sanitation hygiene behavior was found mostly in the moderate category and was proven to be related to the increasing incidence of stunting

Researchers only focus on examining the independent and dependent variables without including other factors in the independent variable and outside the variables that can affect the incidence of stunting among respondents. The selection of children under-five does not take into account the history of body weight and nutritional history of the mother during pregnancy, both of which can affect the incidence of stunting in children under five. Besides, the research subjects were only carried out in one working area of the Puskesmas, thus describing the situation as a whole area.

6. Declaration of Competing Interest.

The authors declare that This article is written with no conflict of interest.

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Ethical Approval

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